Capital structure has been a subject of interest to many researchers over a long period of time because of its importance in financial decision making. As a matter of fact, the amount of debt or equity a company holds significantly determines its survival in the long run. While keeping in mind that the overall objective of the firm is to maximize shareholder wealth and thus increase value, a firm is said to create value when it generates a return greater than its cost of capital. The purpose of this study was to investigate the effects of capital structure on the cost of capital of firms listed at the Nairobi Securities Exchange. The study objectives were; to establish the effects of tangibility on the cost of capital of firms listed at NSE, to determine the effect of equity financing on cost of capital of firms listed at NSE, to establish the effect of long term debt financing on cost of capital of firms listed at NSE and to establish the effect of short term debt financing on cost of capital of firms listed at NSE. The study was informed by trade-off theory and pecking order theory. The research design used was descriptive research design which used to describe the characteristics of a population or phenomenon being studied. The target population for this study were all listed companies on the NSE except commercial banks. A sample of the companies was drawn from 10 firms in the manufacturing and allied section. Data was collected using documentary guide. Data collected was analyzed using descriptive statistics which included means and standard deviations. Inferential statistics such as Pearson correlation and multiple regression was used to test the hypothesis. The findings indicated that tangibility, equity financing and short term debt has a positive and significant effect on the cost of capital, while long term debts exhibited a negative and significant effect on cost of capital. The concluded that tangibility, equity financing and short term debt are important determinates of cost of capital. There is also need for equity financing so as to effectively monitor and coordinate managers so that they act in a manner that increases firm performance. There is also need for financial institutions to develop customized product that will increase firms need to use short term financing as a means to instill confidence by banks through frequent renewals.